

Notice of Allowability

Application No.

10/522,831

Examiner

Agustin Bello

Applicant(s)

MORIWAKI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application filed 2/2/05.
2. ☒ The allowed claim(s) is/are 1-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 2/2/05, 7/18/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

A. Bello

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-13 are allowed.
2. The following is an examiner's statement of reasons for allowance: the prior art fails to specifically teach or suggest a plurality of communication nodes; a wavelength-routing device which establishes communication between the communication nodes based upon route control according to the wavelength of an optical signal; and an optical transmission line which forms a communication path which connects the communication nodes and the wavelength-routing device, wherein the wavelength-routing device comprises: N device input ports, where N being an integer greater than or equal to 2, which are connected via the optical transmission line to the communication nodes; N device output ports which are connected via the optical transmission line to the communication nodes; a plurality of wavelength-band demultiplexers which are provided to each of the N device input ports, and each has a single input port and a plurality of output ports, and the input port is connected to one of the device input ports; a plurality of wavelength-band multiplexers which are provided to each of the N device output ports, and each has a plurality of input ports and a single output port, and the output port is connected to one of the device output ports; and R KxK arrayed-waveguide gratings, where R being an integer greater than or equal to J and J being an integer greater than or equal to 2, which have K input ports and K output ports, where K being an integer that satisfies $K = N$, which have wavelength-routing characteristics in which optical signals having different wavelengths which are inputted to one input port are output at different output ports depending on the wavelengths of the inputted optical signals and in which optical signals having different wavelengths which are

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outputted from one output port are optical signals which have been inputted to different input ports, and . wherein the wavelength-band demultiplexers comprise a means which demultiplexes by wavelength band a wavelength division multiplexed Signal in which a respective predetermined number of wavelengths have been wavelength division multiplexed for each wavelength band which is transmitted from the communication nodes, where wavelength band = central wavelength $\lambda_{Bm} \pm$ wavelength band width λ_m , with $\lambda_{Bm} + \Delta\lambda_m = \lambda_{Bm+1} - \Delta\lambda_{m+1}$, where $1 = m = R-1$, with m being an integer, and outputs the results at different output ports, the wavelength-band multiplexers comprise a means which multiplexes optical signals which have been inputted from the plurality of input ports for each wavelength band and which outputs a wavelength division multiplexed signal in which a predetermined number of wavelengths have been wavelength division multiplexed at the output port, the $K \times K$ arrayed-waveguide gratings are provided with a wavelength-routing characteristic for each wavelength band of central wavelength $\lambda_{B1} \pm$ wavelength band width $\Delta\lambda_1$, central wavelength $\lambda_{B2} \pm$ wavelength band width $\Delta\lambda_2$ ($\lambda_{B1} + \Delta\lambda_1 < \lambda_{B2} - \Delta\lambda_2$), central wavelength $\lambda_{B3} \pm$ wavelength band width $\Delta\lambda_3$ ($\lambda_{B2} + \Delta\lambda_2 < \lambda_{B3} - \Delta\lambda_3$), ..., central wavelength $\lambda_{BR} \pm$ wavelength band width $\Delta\lambda_R$ ($\lambda_{BR-1} + \Delta\lambda_{R-1} < \lambda_{BR} - \Delta\lambda_R$), the output ports of the wavelength-band demultiplexers which are respectively connected to the N device input ports are one to one connected to the input ports of the $K \times K$ arrayed-waveguide gratings which have wavelength-routing characteristics at the wavelength bands of the optical signals which are outputted from the output ports of the wavelength-band demultiplexers, and the output ports of the $K \times K$ arrayed-waveguide gratings are one to one connected to the input ports of any one of the plurality of wavelength band multiplexers which can multiplex optical signals of wavelengths which belong to the wavelength

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bands of the optical signals which are outputted from the output ports of the KxK arrayed-waveguide gratings..

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read "A. Bello". The signature is fluid and cursive, with a large initial "A" and a stylized "Bello".

Agustin Bello
Primary Examiner
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